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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,341	09/02/2003	Mathew Manu	Q72648	1613

23373 7590 06/25/2008

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EXAMINER	
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ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
06/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/652,341	MANU, MATHEW	
	Examiner	Art Unit	
	JOSIAH HERNANDEZ	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-26 and 28-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,7,9-11,14-23,25,26,28-32,34-37,40 and 41* is/are rejected.

7)☒ Claim(s) *4,5,12,13,24,33,38 and 39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 01/22/2008 have been fully considered.

2. Applicant's arguments with respect to claims 1-3, 6, 7, 9-11, 14-23, 25, 26, 28-32, 34-37, 40 and 41 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 6-9, 14-17, 19, 21, 22, 25, 26, 28, 30, 31, 34-37, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Budnikov (US PGPub 2003/0215013) in view of Davidson (US 5,394,473).

As to claims 1 and 9, Budnikov discloses a digital encoding method (see abstract and paragraph [0002]) comprising: determining a type of window

according to a characteristic of an input audio signal (once the input signal enters the system the adaptive grouping psychoacoustic model determines the type of window; see abstract, paragraph [0023] lines 1-10): generating a modified discrete cosine transform spectrum from the input audio signal (see paragraph [0025] lines 7-10); and performing a psychoacoustic model analysis by using the generated transform signals (see paragraphs [0023] lines 1-5; [0025] lines 4-10).

Budnikov does not disclose specifically generating both a CMDCT and an FFT in order to use them for psychoacoustic analysis. The above mentioned method is known in the art.

Davidson teaches a signal processing system (abstract) that determines window type by applying window switching (column 21 lines 53-62) of which CMDCT is used by using the DCT and the DST on the signal (it is inherent that using the MDST and the MDCT, of which contains imaginary parts, would constitute the use of a complex CMDCT, column 21 lines 5-23) the FFT and the CMDCT can be used concurrently (by applying both the FFT and the CMDCT concurrently the system can exploit the fact that the FFT is a complex transform as well as the grouping of the MDCT and the MDST in order to output complex values for the sampling window block and choose correct window sizes according to the type of signal, e.g. transient or non-transient, column 21, lines 5-24), of which are processed according to the window type and an FFT can be used to process the window of which MDCT and MDST coefficients can emerge under the same processing instance as the single FFT (column 21 lines 10-20

60) and finally the results are used for psychoacoustic analysis (column 22 lines 21-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of CMDCT and FFT for psychoacoustic analysis as taught by Davidson. Providing two different transforms to cater specifically to the window block allows for the system to output complex values for the sampling window block and choose correct window sizes according to the type of signal, e.g. transient or non-transient, Davidson column 21lines 5-24).

As to claims 6 and 14, Budnikov discloses if the input audio signal is a transient signal, the type of the window is determined as a short window, and if the input audio signal is not a transient signal, the type of the window is determined as a long window (Budnikov states that MPEG encoders use short sections at the presences of a transient signal and a longer section in the absence of transient signals, see paragraph [0007]).

As to claims 7 and 15, Budnikov discloses performing quantization and encoding based on the result of the psychoacoustic model analysis performed (see figure 5 #'s 54, 16, and 18).

As to claims 8 and 16, Budnikov discloses the psychoacoustic model is a model used by one in a group comprising a motion picture expert's group (MPEG)-1 layer 3, and MPEG-2 advanced audio coding (AAC), an MPEG-4, and a windows media audio (WMA) (see paragraph [0025]).

As to claims 17 and 26, Budnikov discloses a digital encoding method (see abstract and paragraph [0002]) comprising: generating a modified discrete cosine transform spectrum from the input audio signal (see paragraph [0025] lines 7-10); and performing a psychoacoustic model analysis by using the generated transform signals (see paragraphs [0023] lines 1-5; [0025] lines 4-10).

Budnikov does not disclose specifically generating both a CMDCT and an FFT in order to use it for psychoacoustic analysis. The above mentioned method is known in the art.

Davidson teaches a signal processing system (abstract) that determines window type by applying window switching (column 21 lines 53-62) of which CMDCT is used by using the DCT and the DST on the signal (it is inherent that using the MDST and the MDCT, of which contains imaginary parts, would constitute the use of a complex CMDCT, column 21 lines 5-23) the FFT and the CMDCT can be used concurrently (by applying both the FFT and the CMDCT concurrently the system can exploit the fact that the FFT is a complex transform as well as the grouping of the MDCT and the MDST in order to output complex values for the sampling window block and choose correct window sizes

according to the type of signal, e.g. transient or non-transient, column 21lines 5-24), of which are processed according to the window type and an FFT can be used to process the window of which MDCT and MDST coefficients can emerge under the same processing instance as the single FFT (column 21 lines 10-60) and finally the results are used for psychoacoustic analysis (column 22 lines 21-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of CMDCT and FFT for psychoacoustic analysis as taught by Davidson. Providing two different transforms to cater specifically to the window block allows for the system to output complex values for the sampling window block and choose correct window sizes according to the type of signal, e.g. transient or non-transient, Davidson column 21lines 5-24).

As to claims 19 and 28, Budnikov discloses performing a psychoacoustic model analyses by using the long MDCT spectrum and short MDCT spectrum generated (Budnikov does this by applying psychoacoustic perceptual entropy thresholds to the short or long window sizes (see paragraph [0025], figure 5 #'s 54, 26, and 58). As to claims 17 and 26, Budnikov discloses a digital encoding method (see abstract and paragraph [0002]) comprising: generating a modified discrete cosine transform spectrum from the input audio signal (see paragraph

[0025] lines 7-10); and performing a psychoacoustic model analysis by using the generated transform signals (see paragraphs [0023] lines 1-5; [0025] lines 4-10).

Budnikov does not disclose specifically generating both a CMDCT and an FFT in order to use it for psychoacoustic analysis. The above mentioned method is known in the art.

Davidson teaches a signal processing system (abstract) that determines window type by applying window switching (column 21 lines 53-62) of which CMDCT is used by using the DCT and the DST on the signal (it is inherent that using the MDST and the MDCT, of which contains imaginary parts, would constitute the use of a complex CMDCT, column 21 lines 5-23) the FFT and the CMDCT can be used concurrently (by applying both the FFT and the CMDCT concurrently the system can exploit the fact that the FFT is a complex transform as well as the grouping of the MDCT and the MDST in order to output complex values for the sampling window block and choose correct window sizes according to the type of signal, e.g. transient or non-transient, column 21lines 5-24), of which are processed according to the window type and an FFT can be used to process the window of which MDCT and MDST coefficients can emerge under the same processing instance as the single FFT (column 21 lines 10-60) and finally the results are used for psychoacoustic analysis (column 22 lines 21-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by

Budnikov with the use of CMDCT and FFT for psychoacoustic analysis as taught by Davidson. Providing two different transforms to cater specifically to the window block allows for the system to output complex values for the sampling window block and choose correct window sizes according to the type of signal, e.g. transient or non-transient, Davidson column 21lines 5-24).

As to claims 21 and 30, Budnikov discloses determining a type of a window, according to a characteristic of the input audio signal (Budnikov teaches that for MPEG encoders if the input signal is a transient signal than the window size becomes shorter and longer if no transient signals exists) (see paragraph [0007]).

As to claims 22 and 31, Budnikov discloses determining a type of a window, according to a characteristic of the input audio signal (Budnikov teaches that for MPEG encoders if the input signal is a transient signal than the window size becomes shorter and longer if no transient signals exists) (see paragraph [0025]).

As to claims 25 and 34, Budnikov discloses the psychoacoustic model is a model used by one in a group comprising a motion picture expert's group (MPEG)-1 layer 3, and MPEG-2 advanced audio coding (AAC), an MPEG-4, and a windows media audio (WMA) (see paragraph [0025]).

As to claim 35, Budnikov discloses a computer-readable recording medium for recording a computer program code for enabling a computer to provide a service of encoding input audio signals, the service comprising steps of (see paragraph [0032]): a digital encoding method (see abstract and paragraph [0002]) comprising: determining a type of window according to a characteristic of an input audio signal (once the input signal enters the system the adaptive grouping psychoacoustic model determines the type of window) (see abstract, paragraph [0023] lines 1-10): generating a modified discrete cosine transform spectrum from the input audio signal (see paragraph [0025] lines 7-10); and performing a psychoacoustic model analysis by using the generated transform signals (see paragraphs [0023] lines 1-5; [0025] lines 4-10).

Budnikov does not disclose specifically generating both a CMDCT and an FFT in order to use it for psychoacoustic analysis. The above mentioned method is known in the art.

Davidson teaches a signal processing system (abstract) that determines window type by applying window switching (column 21 lines 53-62) of which CMDCT is used by using the DCT and the DST on the signal (it is inherent that using the MDST and the MDCT, of which contains imaginary parts, would constitute the use of a complex CMDCT, column 21 lines 5-23) the FFT and the CMDCT can be used concurrently (by applying both the FFT and the CMDCT concurrently the system can exploit the fact that the FFT is a complex transform

as well as the grouping of the MDCT and the MDST in order to output complex values for the sampling window block and choose correct window sizes according to the type of signal, e.g. transient or non-transient, column 21lines 5-24), of which are processed according to the window type and an FFT can be used to process the window of which MDCT and MDST coefficients can emerge under the same processing instance as the single FFT (column 21 lines 10-20 - 60) and finally the results are used for psychoacoustic analysis (column 22 lines 21-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of CMDCT and FFT for psychoacoustic analysis as taught by Davidson. Providing two different transforms to cater specifically to the window block allows for the system to output complex values for the sampling window block and choose correct window sizes according to the type of signal, e.g. transient or non-transient, Davidson column 21lines 5-24).

As to claim 40, Budnikov discloses a computer-readable recording medium (see paragraph [0032]) of which if the input audio signal is a transient signal, the type of the window is determined as a short window, and if the input audio signal is not a transient signal, the type of the window is determined as a

long window (Budnikov states that MPEG encoders use short sections at the presences of a transient signal and a longer section in the absence of transient signals) (see paragraph [0025]).

As to claim 41, Budnikov discloses a computer-readable recording medium (see paragraph [0032]) of which performs quantization and encoding based on the result of the psychoacoustic model analysis performed (see figure 5 #'s 54, 16, and 18).

3. Claims 2, 10, 20, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Budnikov (US PGPub 2003/0215013) in view of Davidson (US 5,394,473) as applied to claim 1 and in further view of Li (US PGPUB 2003/0187634).

As to claims 2, and 10, Budnikov discloses dividing the input audio signal into a plurality of subbands by filtering the input audio signal (the dividing of a signal into subbands is done by a filter analyzer, see figure 5 #12), and the step for determining the window type is preformed for the input audio signal divided into subbands (see figure 5 #'s 54 and 24).

Budnikov discloses determining window length based on if the signal is in the transient state or not. However Budnikov does not disclose specifically

window switching after signal is separated into different subbands. Li teaches after channel separation, each component of audio is then transformed using switching window (paragraph [0014])

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of switching windows after subband separation. Such techniques are well known to those skilled in the art (paragraph [0067).

As to claims 20, and 29, Budnikov discloses dividing the input audio signal into a plurality of subbands by filtering the input audio signal (the dividing of a signal into subbands is done by a filter analyzer, see figure 5 #12), and the step for determining the window type is preformed for the input audio signal divided into subbands (see figure 5 #'s 54 and 24).
Budnikov discloses specifically window switching after signal is separated into different subbands. Li teaches after channel separation, each component of audio is then transformed using switching window (paragraph [0014])

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of switching windows after subband separation. Such techniques are well known to those skilled in the art (paragraph [0067).

As to claim 36, Budnikov discloses a computer-readable recording medium (see paragraph [0032]) of which performs the step for determining the window type is preformed for the input audio signal divided into subbands (see figure 5 #'s 54 and 24).

Budnikov discloses determining window length based on if the signal is in the transient state or not. However Budnikov does not disclose specifically window switching after signal is separated into different subbands. Li teaches after channel separation, each component of audio is then transformed using switching window (paragraph [0014])

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of switching windows after subband separation. Such techniques are well known to those skilled in the art (paragraph [0067).

4. Claims 3, 11, 23, 32, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Budnikov (US PGPub 2003/0215013) in view of Davidson (US 5,394,473) and Li (US PGPUB 2003/0187634) and in further view of Chen et al. (US PGPub 2003/0115042).

As to claims 3 and 11, Budnikov , Davidson, and Li do not disclose specifically using a poly-phase filter bank. Chen teaches the use of a polyphase/MDCT filter bank in MP3 encoding (see paragraph [0044]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of a polyphase filter bank. Doing so would have allowed for stereo or multi-channel signals to be analyzed more efficiently.

As to claims 23, and 32, Budnikov does not disclose specifically using a poly-phase filter bank. Chen teaches the use of a polyphase/MDCT filter bank in MP3 encoding (see paragraph [0044]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the encoding system disclosed by Budnikov with the use of a polyphase filter bank. Doing so would have allowed for stereo or multi-channel signals to be analyzed more efficiently.

As to claim 37, Budnikov discloses a computer-readable recording medium (see paragraph [0032]). Budnikov does not disclose specifically using a poly-phase filter bank. Chen teaches the use of a polyphase/MDCT filter bank in MP3 encoding (see paragraph [0044]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the encoding system

disclosed by Budnikov and Davidson with the use of a polyphase filter bank. Doing so would have allowed for stereo or multi-channel signals to be analyzed more efficiently.

Allowable Subject Matter

5. Claims 4, 5, 12, 13, 24, 33, 38, and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

As to claim 5, 13, and 39, the prior art of record, either alone or in combination, does not teaches or fairly suggests the limitation of determining a window type to be a long/short window, a long/short CMDCT spectrum is generated, respectively, by applying a long/short window and a short/long, respectively, FFT spectrum is generated by applying a short/long, respectively, window and the psychoacoustic model analysis is performed based on the generated short CMDCT spectrum and long FFT spectrum.

Conclusion

Any inquiry concerning this communication should be directed to Josiah Hernandez whose telephone number is 571-270-1646. The examiner can normally be reached from 7:30 pm to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JH

/Talivaldis Ivars Smits/
Primary Examiner, AU 2626

6/23/2008